

## Let's Celebrate Earth Day!



Earth Day is almost upon us! For more than 25 years, citizens of the United States have set aside April 22 as a special day to celebrate the Earth. Increasing student understanding and acting on personal values related to the environment can be a tremendous educational and community-based experience for educators and their students. Today's students will be tomorrow's lawmakers, consumers, and business owners. Teachers play a crucial role in opening up environmental awareness and connecting our youth to the world around them. By introducing lessons and concepts along environmental themes, teachers will not only introduce their students to math, language arts, and science, but also to the tools, knowledge, and power

to make the world a better place.

CIWMB is doing its part to help teachers educate their students about resource management and conservation. A free copy of *Closing the Loop Sampler*, which is a collection of Earth Day activities, is available to all California teachers. This sampler is a small subset of *Closing the Loop*, which is a curriculum of teacher-led activities directed at helping students discover and nurture an environmental ethic and stewardship for natural resources. Activities focus on solid waste and environmental awareness topics, are hands-on, interdisciplinary, and apply to grades K-12.

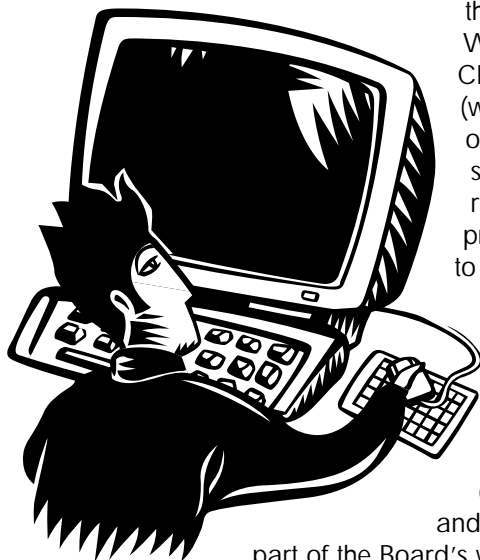
*Closing the Loop* is available at no cost to teachers who participate in one of CIWMB's teacher trainings. These trainings are also available at no cost and can take place at regional or statewide workshops, or during a district in-service day. If you are interested in scheduling a workshop or would like a free copy of the sampler, please call the CIWMB Public Education and Assistance Section at (916) 255-2385. If you are unable to attend a workshop, you can purchase a copy of *Closing the Loop* for \$17.50. Please send your check made payable to "CIWMB," along with your name and address to:

CIWMB  
Public Education and Assistance Section  
8800 Cal Center Drive, MS 5  
Sacramento, CA 95826

Reusable School News (the News) is published by the California Integrated Waste Management Board (CIWMB), the agency responsible for overseeing the development and implementation of a statewide integrated waste management program. CIWMB provides technical assistance and resource information to school districts in developing waste prevention and recycling programs. The News highlights case studies showcasing the economic and environmental benefits of establishing a district-wide waste reduction program. It is being sent to local governments, school districts, schools and other interested parties. For more information, call the Public Education & Assistance (Schools) Section at (916) 255-2385.

# Find it on the Web!

Do you need information or resource materials on waste management or resource conservation? You can find all the information you need by visiting the



CIWMB home page on the World Wide Web (WWW)! The CIWMB home page ([www.ciwmb.ca.gov](http://www.ciwmb.ca.gov)) offers a one-stop shop for information ranging from waste prevention strategies to waste management economics, composting, and waste disposal. Anyone with web access can instantaneously view, copy, or save text and graphics. One

part of the Board's web site, the Waste Prevention Information Exchange, contains over 1,500 samples of brochures, copies of reports,

articles, and clip art. (From the home page, choose "Directories/Databases," then "Waste Prevention Info Exchange.") The CIWMB Public Education and Assistance Program has an exciting topic page with resources and information regarding integrated waste management curriculum, learning activities, program assistance, and teacher training workshops. Please take a peek at our web site at [www.ciwmb.ca.gov](http://www.ciwmb.ca.gov) and choose the Teachers/Students hypertext link.

## Other Interesting Environmental Web Sites:

Energy Quest, California Energy Commission: A compilation of energy-related activities for students. [www.energy.ca.gov/energy/education/eduhome](http://www.energy.ca.gov/energy/education/eduhome)

California Environmental Resources Evaluation System (CERES): A list of home pages of State environmental departments and boards under the California Resources Agency. [www.ceres.ca.gov/education/](http://www.ceres.ca.gov/education/)

Envirolink: A national clearinghouse for environmental and education materials. [www.envirolink.org/enviroed](http://www.envirolink.org/enviroed)

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## Closing the Loop Studied by 100 Teachers From Five Counties

CIWMB, together with the San Joaquin County Office of Education and the California Science Implementation Network (CSIN) provided *Closing the Loop (CTL)* to about 100 teachers from Amador, Calaveras, Tuolumne, Stanislaus, and San Joaquin Counties. Most of the participants are lead teachers in CSIN, which is part of the California Alliance for Math and Science (CAMS). CAMS is funded through a Statewide Systemic Initiative from the National Science Foundation. Other partners for this event included San Joaquin County Department of Public Works, Stanislaus County Department of Environmental Resources, and Cal Sierra Disposal in Tuolumne County.

This training, titled the "Earth Day Retreat," took place April 1997 at the Foothill Horizons Outdoor Education Center in Sonora, California. The focus of the retreat was to explore correlations between *CTL* and *A Child's Place in the Environment (ACPE)*, the State's environmental education curriculum. Grade-level facilitators helped teachers learn about *CTL* and how to integrate it into lessons provided by ACPE. Teachers received copies of *CTL* in English and Spanish, materials donated by the various partners, and *A Classroom Resource Guide*. A product of the event, *A Classroom Resource Guide* is organized for grades 1-6 and enables teachers to use both curricula together effectively.

Another exciting component of this retreat was the participation of retired scientists from the Teaching Opportunities for Partners in Science (TOPS). These scientists also received training to become familiar with *CTL*. TOPS connects scientists with elementary schools in Stanislaus, San Joaquin, and Tuolumne County and for the past four years has been working to improve elementary science. For more information about this event, CSIN, or TOPS, please contact Judi Wilson, San Joaquin County Office of Education, at (209) 468-4882, or by e-mail at [judi\\_wilson@qmail.sjcoe.k12.ca.us](mailto:judi_wilson@qmail.sjcoe.k12.ca.us). If you have questions or would like a copy of *A Classroom Resource Guide* please contact Amber Robinson-Burmester, CIWMB at (916) 255-2377.

# April is "Keep California Beautiful Month" and Time to Spring Clean California!

This is a call for all Californians, both children and adults, to get involved in Keep California Beautiful Month (April 1998) by organizing cleanup and beautification events at your schools, in your neighborhoods, and in parks and recreational areas throughout the state.

Keep California Beautiful (KCB), a nonprofit environmental organization, is mobilizing citizens and encouraging them to roll up their sleeves and commit to organizing or participating in at least one project during the month of April. Keep California Beautiful Month, 1998 will be the fourth annual event of its kind in California and is becoming the largest series of cleanup and beautification events in the nation. "We not only have the most beautiful state, but we have millions of dedicated and committed people who want to keep it that way", said Marlene Mariani, Executive Director. Events will be held as far north as Crescent City and as far south as San Ysidro and volunteers will be needed everywhere. "We want everyone to get involved!" she added.

Find out how you can foster pride and respect for our great state by volunteering a little time this April. Possible projects include cleaning up a neighborhood, a street, or an unsightly lot; painting out graffiti; cleaning a river or stream; planting flowers or trees; adopting a highway; or cleaning up a park or recreation area. Get your neighbors and friends involved too!

Call KCB for more information on events already planned in your community or how you can organize one yourself. Call 1-800-CLEAN CA or write to:

KCB  
2300 River Plaza Drive  
Sacramento, CA 95833

Don't forget to ask for a Cleanup Kit. Thanks for helping Keep California Beautiful! KCB's sponsors and partners include the following:

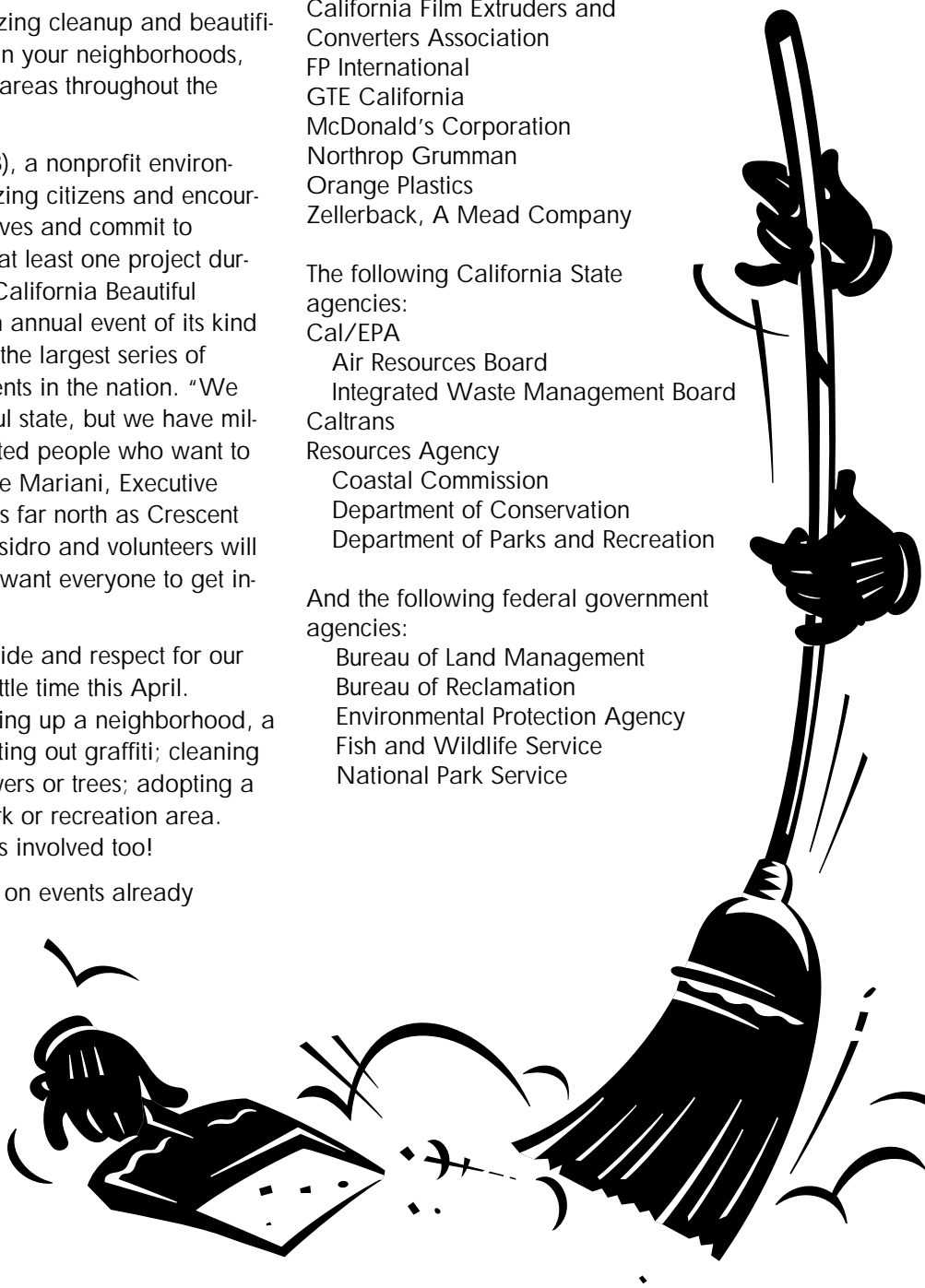
Anheuser-Busch  
American Plastics Council  
Carl's Jr.  
California Farm Bureau Federation  
California Film Extruders and  
Converters Association  
FP International  
GTE California  
McDonald's Corporation  
Northrop Grumman  
Orange Plastics  
Zellerbach, A Mead Company

The following California State agencies:

Cal/EPA  
Air Resources Board  
Integrated Waste Management Board  
Caltrans  
Resources Agency  
Coastal Commission  
Department of Conservation  
Department of Parks and Recreation

And the following federal government agencies:

Bureau of Land Management  
Bureau of Reclamation  
Environmental Protection Agency  
Fish and Wildlife Service  
National Park Service



# City of Santa Monica Partners with Schools to Make Mixed Paper Collection a Success

In 1994 the City of Santa Monica's Recycling Division expanded an already comprehensive residential recycling program to include mixed waste paper collection. The mixed paper program was implemented to address the large volume of paper in the waste stream coming from multifamily residents and businesses. In addition, schools were seen as ideal candidates for participation due to the large amount of waste paper generated by campuses and the minimal sorting the program required. The school program was marketed to administrators as an alternative to the practice of landfilling and as opportunity for student leadership and community stewardship, and as a vehicle to incorporate recycling themes into a science-based curriculum in the classroom.

All Santa Monica schools, public and private, were eventually included in the program: one junior college, five high schools, and twenty middle and elementary schools. The city provides, free of charge, 14-gallon collection boxes for all classrooms and administrative offices, and 3-cubic-yard collection bins that are serviced on a regular basis. The city also offers staff time to educate students, instructors, and administrators on the importance of recycling.

Students have been involved from the program's inception and assisted in its introduction, implementation, and ongoing maintenance. After a brief orientation by city staff and their instructors, the students work to educate fellow students about program specifics and the importance of recycling. The students also monitor and service collection bins throughout campus. If the bin is located off campus, the material is placed at a designated area for custodial staff to handle further. The program has been successful in giving students important roles in the daily operation of their school.

One science teacher, Roe Johnston of Lincoln Middle School, went to great lengths to see that paper recycling was not only successful but also expanded to include cans, glass, and plastic in what is a very sophisticated program completely managed by the students. Mr. Johnston says of his students, "It's probably the first time most of them have been involved in a community-based activity." In addition, Mr. Johnston's students learn about what they can do to make a difference. He notes, "Studying the rainforest is a great idea but we need to make sure we're managing our own backyard too."

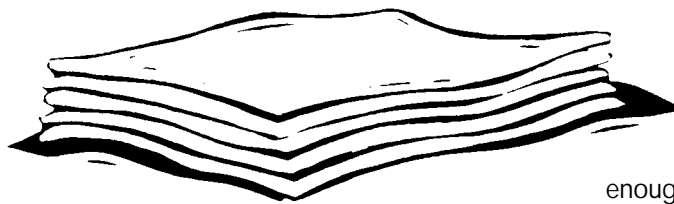
School recycling programs, in order to succeed, require the combined efforts of recyclers, administrators, educators, students, custodians, and parents. If you have strong combinations of any three groups, the program will succeed, but as the staff of Santa Monica Recycling Division has found, it is essential to have buy-in from all parties to maintain healthy school recycling programs. Further, solid customer support services from the

recycler are vital throughout the entire process. The support must be consistent, persistent, and flexible enough to customize services to

every situation.

Despite strong customer support from the recycler, problems may arise if the school puts too much responsibility for the management of the program into the hands of a few. For example, parent-dominated support is great in the short term; but, like students, they graduate and long-term management suffers. Teachers, administrators, and custodians alike can move on or lose interest over time and, again, the program suffers. If administrators are overwhelmed with the daily management of the school then the program has difficulty even getting off the ground.

School recycling is a vital component of Santa Monica's environmental educational outreach. Such cooperative recycling programs demonstrate how local government and schools can develop meaningful relationships to advance the standards by which natural resources are managed.



# New High School Curriculum Coming Soon!

What happens to the used oil from your car when you replace it with fresh oil? Why is it a problem when you pour used oil on weeds? How does oil work in your engine? What is re-refined oil? What is the best way to conserve on oil usage and protect the environment?

These are questions that many of us consider when operating an automobile. Younger high school students who are just beginning to drive will find answers to these and other questions in a new curriculum being developed by the CIWMB and the Scope, Sequence, and Coordination Project (SS&C). The CIWMB and SS&C have partnered to develop a 9th- and 10th-grade coordinated/integrated science curriculum entitled "Earth's Resources-A Case Study: Oil." The curriculum is designed to teach young drivers the science concepts behind the decisions they will need to make, as well as some of the consequences of their decisions.

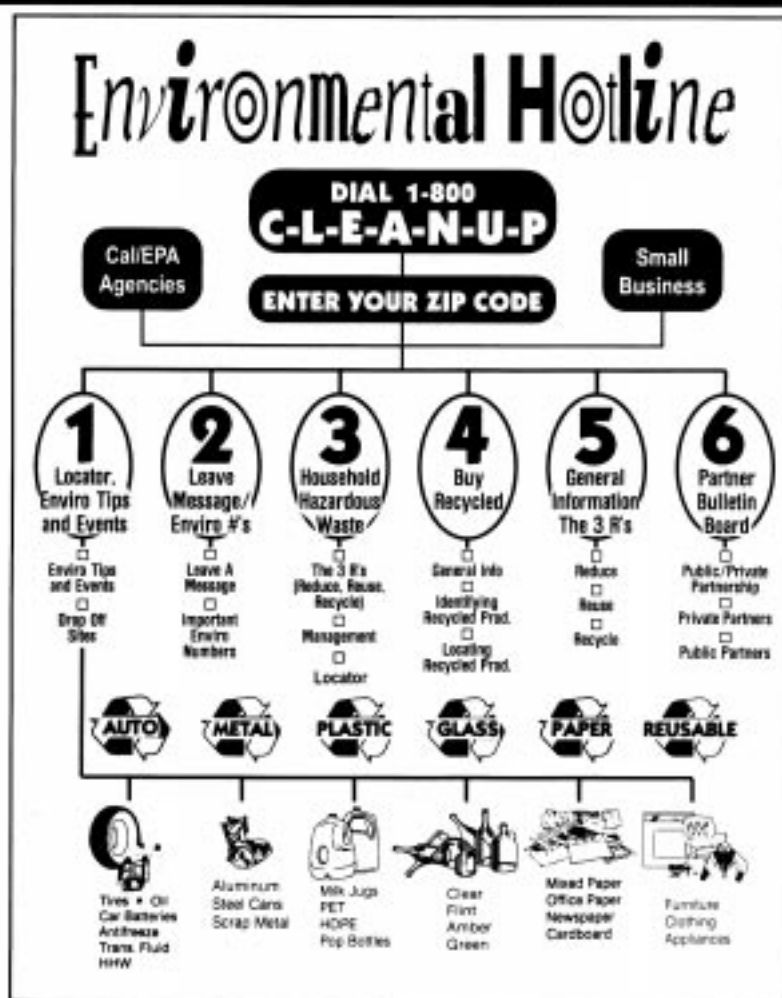
Recycling and reuse of oil is the theme of this three- to four-week curriculum, which can be incorporated into existing science courses. State and national science documents such as the National Science Education Standards, California Science Framework, Benchmarks for Science Literacy, and California Guide to Environmental Literacy are being used as guidelines for curricular content. Teacher teams from across the state developed the curriculum, which includes assessment strategies and a materials kit. The teacher teams

received guidance from the project's advisory board—consisting of representatives from the oil industry, oil recycling industry, environmental organizations, CIWMB, SS&C and scientists from each discipline of education. The curriculum will be disseminated through in-service workshops to be held in fall 1998. Each teacher attending the workshops will receive a copy of the curriculum, a materials kit, and training on how to use the curriculum in the classroom.

For more information contact:

Phil LaFontaine, Used Oil Curriculum Project Director  
SS&C Project, CSU Sacramento  
6000 J Street  
Sacramento, CA 95819  
E-mail: philla@csus.edu  
Phone: (916) 278-4785

## Environmental information at your fingertips.



# Using Worms to Teach Science

**by Mark Lantz**  
**Chaparral Middle School**

A colleague of mine turned me on to the 48th Agricultural District of the State of California. He said that they were giving away instructional materials having to do with agriculture in the classroom. I met with Carol Spolstra, then the director, who showed me lots of materials dealing with topics from corn to hydroponics and chickens to worms. Growing worms? In a classroom? The questions started to fly.

The Agricultural District would supply all the worms and boxes. Teachers would supply the initial bedding material and composting material (i.e., food waste). Two books were used as resources. *Worms Eat My Garbage* by Mary Appelhof provided a wealth of facts and answered many questions. Using the books as a guide, Chaparral's worm colony began.

Our school district's sixth-grade curriculum includes geology and life science. A study of worms is a great segue between the two science strands. Students study soil profiles. They get an appreciation for the interactions of geologic formations and biological organisms.

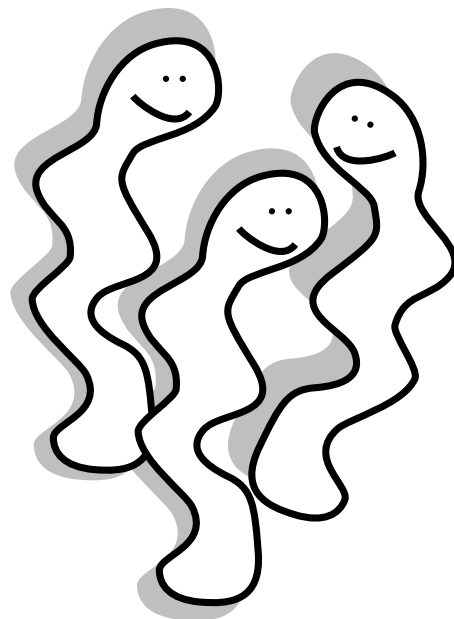
Specifically, students have explored topics such as erosion and deposition, soil makeup, minerals in soils, and the nitrogen, oxygen, water, and food cycles. They learned about microscopic life in solids, which includes bacteria and protists. Macroscopic life includes insects, mites, fruit flies, and other bugs as well as the different species of worms. Investigations in the growth and decay of plant life were carried out. This is where the concept of recycling and vermicomposting was discussed. A close study of worms can be helpful in comparative anatomy. Muscle physiology, blood flow, digestive systems, and reproduction are all aspects of worm anatomy that can be compared to human anatomy. The observational skills of students can be enhanced through looking at live worms and their behavior. The worms do not need to be dissected or killed when they are being studied, nor should they be. Development of the principles of scientific thinking (the scientific method) can be enhanced in students when they are asked what aspect of worms they want to know more about. Chaparral

Middle School students were asked to come up with a question and hypothesis about worms. They then had to invent a way of testing the hypotheses by performing an experiment. The tests could not intentionally harm the worms. The students then had to carry out the experiment and explain the conclusions.

Questions have included:

- How much food could one worm eat in a week?
- If a worm is blindfolded, can it still react to light?
- What foods do worms like best?
- What environment do worms thrive in?

At the end of study, students were asked to form groups. They had to create an exhibit which showed what they learned about worms. The students in their respective classes evaluated each team and the top three displays were sent to the Agricultural District Fair. In 1995, the students won first through sixth place in their division. The worm project has been an integral part of the sixth-grade science program. Each summer the worms need to be cared for. They require relatively stable environments-extremes in temperature, moisture, and inappropriate bedding can lead to worm demise. Although, this is not a fool-proof exercise, it is definitely engaging and can be successful with the right amount of attention. For more information on the Chaparral Worm Project, contact Mark Lantz at (909) 861-6227.



# Growing Healthy Gardens With Worms

Teachers looking for resources in the area of gardening and worm composting have an ally in the California Integrated Waste Management Board. The CIWMB can provide you with local contacts to help you get started or expand your environmentally friendly garden. Many communities have local government experts and master gardener volunteer programs that can aid you in designing your program and provide you with technical expertise to manage your garden. Involving students in the design and maintenance of a garden and compost program is key to a successful project. The CIWMB offers, at no cost to school districts, in-service programs focused on incorporating curricular activities with a hands-on garden and compost project. The CIWMB staff developers will design a workshop to fit your needs and each teacher attending the in-service will receive his/her own copy of the curricular materials. Many of the materials are translated into Spanish and will be provided upon request. To receive these valuable resources, contact the CIWMB at (916) 255-2385 and let us help you.

## Grants For Gardens

Are you in need of funding to purchase equipment for your garden program?

The National Gardening Association (NGA) runs the Youth Gardening Grants Program, which annually selects 300 exemplary school and youth group gardening programs to each receive \$500 worth of tools, seed, equipment, and educational materials. Winners are selected on the basis of need, the strength of their project plans, and the existence of community support. Applications are available each summer, with a November 15 deadline. Contact the NGA at 1-800-538-7476 for more information.



# CREEC Network Coordinator Update

Ten of eleven state regions have applied for and will receive California Department of Education (CDE) Environmental Education Grant Program funding to participate in a California Environmental Education Regional Coordinator (CREEC) Network. Each region raised a minimum of \$10,000 and received another \$20,000 to

support two part-time environmental education (EE) coordinators, one serving secondary and the other elementary educators, for the entire school year (40 weeks). The main function of the coordinators is to enhance and accelerate information flow about EE resources and materials. For more information on the CREEC Network or a list of CREEC Coordinators, contact Bill Andrews at CDE, Office of Environmental Education 721 Capital Mall, Sacramento, CA 95814, (916) 657-5374. The CREEC e-mail address is [creec@goldmine.cde.ca.gov](mailto:creec@goldmine.cde.ca.gov).

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The Integrated Waste Management Board (IWMB) does not discriminate on the basis of disability in access to its programs. IWMB publications are available in accessible formats upon request by calling the Public Affairs Office at (916) 255-2296. Persons with hearing impairments can reach the IWMB through the California Relay Service, 1-800-735-2929.



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